FINANCIAL REPRESSION AND CAPITAL CONTROLS IN SUDAN: AN EVALUATION OF FISCAL EFFECTS

Author: Sawsan Abdul-Jalil
Affiliation: Teaching assistant, department of economics, University of Khartoum
Address: Al- Gamaa Street, P.O.Box:321, 11115, Khartoum, Sudan
Telephone: +249922651870
Email: sawsan.abduljalil@gmail.com/sawsan.m.a.abduljalil@uofk.edu
Nationality: Sudanese

ABSTRACT

The purpose of this paper is to evaluate the fiscal effects of capital controls on outflows in Sudan over the period 2000-2014. To determine whether capital controls liberalization will contribute to a loss of government revenue. The paper provides a novel estimation of the fiscal revenue of capital controls in via financial repression. The estimation is based on the difference between the domestic and foreign cost of borrowing. Interestingly, the revenue from capital controls is negative. The paper suggests that the main reason behind this result is the high yield on government bonds due to the critical need to mobilize domestic resources.

Keywords: capital controls, financial repression, Sudan

1 Introduction

The year 2011 marks the onset of Sudan's current economic crisis, which arose in the aftermath of the secession of South Sudan. The main implication of the secession was the loss of the critical oil revenue on which Sudan was dependent. Consequently, the adverse oil shock triggered several domestic and external imbalances, increases in foreign debt, steep currency depreciation, high inflation rates, and a growing fiscal deficit. Faced with a new economic challenge, the Sudanese government embarked on an economic stabilization program with the assistance of the International Monetary Fund (IMF) to cope with the adverse effects of the separation. One important aspect of the policy package is the emphasis on the removal of capital controls in Sudan.[1]

This situation pertains to the heated debate on capital account liberalization, between advocates who believe that restrictions lead to misallocations of resources and lower investment, breed corruption and constitute administrative burdens. And opponents who argue that capital controls can be used as a short-term policy measure to avoid the disruptive effects of capital flows volatility on the exchange rate and foreign reserves. However, as noted by Massa (2014) one aspect of capital controls has not received sufficient attention in this discussion, and that is the fiscal function of controls on capital outflows.

The fiscal effect of capital controls on outflows has been addressed by economists such as Alesina, Grilli, & Milesi-Ferretti (1993), Giovannini & De Melo (1991) and Grilli & Milesi-Ferretti (1994). They discuss two main channels through which the fiscal effect is generated: lowering its domestic cost of borrowing and the maximization of seigniorage.[2]

---

[1] For more information on the capital controls in Sudan check the IMF annual report on exchange arrangements and exchange restrictions. The dataset provides detailed information on the various capital restriction measures in member countries

[2] Seigniorage refers to the government's revenue from printing money. This concept will be discussed further in the next chapter.

Under these circumstances would it be viable for the Sudan to left the capital outflow restrictions and forgo the needed fiscal revenue. This question would be evaluated by calculating the fiscal revenue from capital controls in Sudan following the methodology of Giovannini & De Melo (1991). The underlying estimation here is based on the assumption that capital controls on capital outflows, in conjunction with other regulations in the financial sector, creates a wedge between the domestic and external cost of borrowing. Hence, by finding out this difference, one can recognize the fiscal relevance of capital controls on capital outflows.

It should be noted that capital controls will refer to capital controls on outflows hereafter.

2 Revenue from Financial Repression: A theoretical overview

There is no single definition of the term "financial repression", however, in general, it refers to "a set of government regulations, laws, and other non-market restrictions [which] prevent the financial intermediaries of an economy from functioning at their full capacity" (Ito, 2009, p.430). The term was coined by McKinnon (1973) and Shaw (1973), who, in their seminal papers, argue that financial liberalization is an integral part of economic development. McKinnon defines economic development as the "reduction of great dispersion in social rates of return to existent and new investment…Economic development so defined is necessary and sufficient to generate high rates of savings and investment" (McKinnon, 1973, p.9). Shaw supports the call for financial liberalization by suggesting that "the argument for liberalization in finance is that scarcity prices for savings increase rate of saving and improve savings allocation" (1973, p. 121). Accordingly, financial repression in the view of McKinnon and Shaw hinders the mobilization of domestic savings as it entails lower rates of return on savings which impedes economic growth.

Despite the sound theoretical basis for the role of financial liberalization in economic growth, the McKinnon-Shaw hypothesis has been criticized by various theorists (Ito, 2009). One critique is that Mckinnon and Shaw did not account for the importance of macroeconomic conditions of developing countries that might alter the predictions of their hypothesis, for example, the lower capacity of governments in developing countries to generate revenue (Fry, 1989). From a public finance point of view, financial repression helps governments to raise funds at a cheaper cost than that which would be incurred in the market (Ito, 2009).

Giovannini & De Melo (1991) argue that this fiscal aspect must be considered when evaluating the costs and the benefits of financial liberalization. Quantitative and

qualitative measures which typically constitute financial repression can include interest rate ceilings, high bank reserve requirements, credit ceilings or restrictions on directions of credit allocation, government ownership or domination of banks (Reinhart & Sbrancia, 2011), these measures allow governments to accrue fiscal revenue. For instance, by controlling interest rates, the government can create a wedge between domestic and foreign interest rates, which in turn allows the government to reduce its borrowing costs and accumulate less domestic debt (Battilossi, 2003). Alternatively, by manipulating the reserve requirement or liquidity ratio, monetary authorities push depository institutions to hold part of their assets in the form of liquid assets, usually in the form of government bonds or currency (Brock, 1989). In the case of bonds the government can borrow from commercial banks at zero cost (Battilossi, 2003). In the case of currency, it represents a seigniorage revenue for the government from printing money (Battilossi, 2003; Jha, 2003, p. 315).[3]

In this context, the effectiveness of generating government revenue depends to a large extent on the limited possibilities of domestic capital of accessing external markets. This makes capital controls critical in the implementation of financial repression measures because these measures limit the flight of resources outside the national/domestic economy. This is the principal reason for why most countries, which implement financial repression, also impose capital controls (Grilli & Milesi-Ferretti, 1994).

Several empirical studies underline the complementary relationship between financial repression revenue and capital controls. In an influential contribution, Giovannini & De Melo (1991) estimates government revenue from financial repression in the presence of capital controls, finding that financial repression results in a difference between domes-

---

[3] Battilossi (2003) notes that there is a complementary relationship between the revenue from financial repression and seigniorage in the presence of capital controls. Assuming that people hold their assets either in the form of currency or government bonds. As seigniorage usually leads to inflation, an increase in the level of inflation will decrease the real interest rate and decrease the demand for money with regard to bonds. At the same time, if nominal interest rates are administratively capped then the demand for money will decrease and the demand for bonds will increase (in an underdeveloped financial sector where the government bods dominates the market).

tic and foreign interest rates. This differential is beneficial to the government when selling its liabilities to the banking system or the public.

Accordingly, the revenue generated from financial repression can be calculated as the difference between the interest rate paid by the government on foreign borrowing and the interest paid on domestic borrowing.[4] Giovannini & De Melo (1991) capture the change in the foreign cost of borrowing due to the variations in the exchange rate, which results in a revenue expressed as an annual percentage of both GDP and central government revenue. The authors employ a panel study framework; wherein they calculate the financial repression revenue for a sample of 24 developing countries for the period 1972-1987. The results indicate that on average the revenue from financial repression was 1.4% of GDP.

Within the sample studied, Giovannini & De Melo observed significant variations since "the time-variation of exchange-rate changes account for the most time-variation of the gains from financial repression" (Giovannini & De Melo, 1991, p.16).[5]

Several studies have reached similar findings. Reinhart & Sbranica (2011) focusing on industrialized countries, find that financial repression played a central role in reducing nominal interest rates and bringing down the public debt/GDP ratio during the Bretton-Woods era when capital controls were widely used. Battilossi (2003), using the same methodology proposed by Giovannini & De Melo (1991), finds that financial repression revenue in Italy from 1965-1990 (a period in which capital controls were heavily imposed) was on average 1.4% of GDP. Reinhart & Santos (2015) further estimated that between 1984 and 2013 in Venezuela, the revenue from financial repression was on average 1.6%

---

[4] The details on the calculation equation will be provided in chapter 4.

[5] In the study the highest revenue from financial repression was recorded in Mexico and Zimbabwe at 6% of GDP, both countries during the sample period experienced significant exchange rate changes.

of GDP, with revenue tending to be higher during times of exchange controls and ceilings on interest rates.

By contrast, the fiscal effect of capital controls has not been found to be consistently positive. More recently, Aizenman & Pasricha (2013) conducted a panel study, drawing from a sample of 22 emerging markets for the period 2000-2010. In contrast to Giovannini & De Melo's (1991) results, they found that the average financial repression revenue for the sample was negative (-0.19% of GDP) and in decline for the whole sample. They propose two main explanations for this result: firstly the emerging markets sampled experienced high levels of economic growth during the study period and, coupled with lax monetary policy in advanced economies, this led to a decline in the in foreign risk premiums; secondly, large capital inflows attributable to economic growth in these emerging markets contributed to an appreciation of the exchange rate. Using the same methodology, Jinjarak (2013) supports Aizenman & Pasricha (2013) findings that financial repression revenue has been in decline due to a globalized trend towards financial liberalization over the last two decades.

3 Financial repression in Sudan

According to the literature that has been explored in the previous chapter, there is a close relationship between financial repression and the imposition of capital controls. The literature stipulates that enforcing capital controls maximizes government revenue from financial repression. In this section, I will present a brief description of the financial sector in Sudan and discuss in which ways it is considered to be repressed.

A number of studies argue that the financial sector in Sudan is still under-developed due to the heavy governmental involvement that takes the form of restrictive monetary policy and encumbering regulations (Elhiraika, 1998, 2004; Kireyev, 2001). As described in the previous chapter, financial repression results in an underdeveloped financial system; hence, an assessment of the development of the financial sector in Sudan might give an insight into whether the sector is suppressed.

In comparison to its other comparable countries, Sudan's financial sector is considered to be underdeveloped. A useful indicator for evaluating the degree of development of the financial sector is the ratio of the broad money to GDP, referred to as the M2/GDP ratio[6]; a high value of this ratio indicates an improvement in channeling savings into investment and consequently, a high degree of financial intermediation and financial sector development (Elhiraika, 1998; Von Furstenberg & Fratianni, 1996). Graph 1 depicts the trend of the M2/GDP ratio for Sudan and selected countries that operate either a full or partial Islamic financial system.[7] On average, the ratio did not surpass the 30% mark, compared with the averages of Pakistan (43%), Egypt (71%) and Malaysia (98%). This signals a weak financial intermediation in Sudan compared to its peers.

---

[6] There are different operational definitions for the broad classification of money M2, however, here I will use the definition used by IFS as the summation of currency in circulation, demand deposits and time deposits. It is not a perfect indicator for financial development, as it might indication of monetization rather than financial intermediation (Elhiraika, 1998). But due to data limitation it is employed here.
[7]The Islamization of the financial sector in Sudan started in 1982 with the opening of 5 Islamic banks, later in 1992 a full adoption of Islamic banking was imposed.

**Graph 1: M2/GDP, in percent, selected countries, 1965-2014**
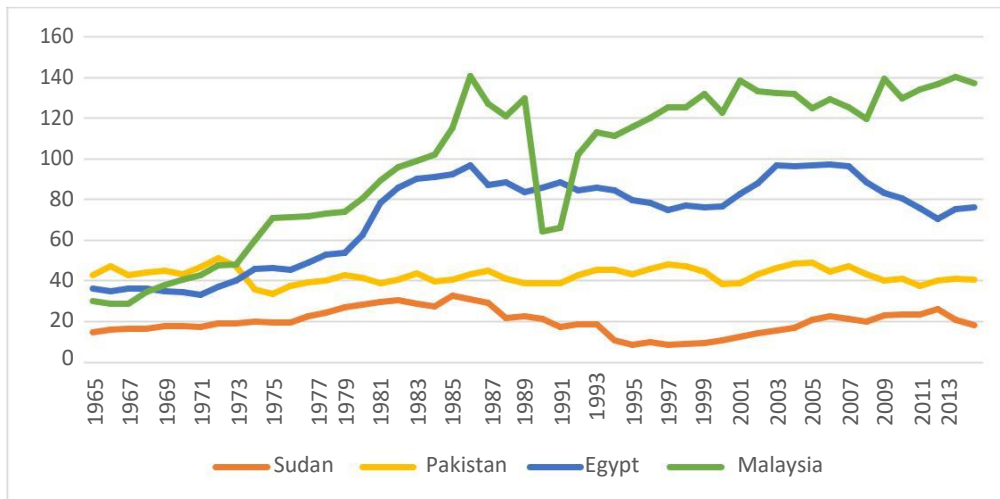
Source: WB (2016)

Graph 2 illustrates the fluctuations in the M2/GDP ratio in Sudan over the same period. The ratio increased steadily up until the mid-1980s. Elhiraika (1998) argues that this improvement was a result of a lax monetary policy at that time. These policies helped in harnessing public confidence in the financial sector and as a result, domestic credit and broad money increased. In 1985, however, the upward trend was reversed and declined steeply until the mid-1990s. During this time, the Sudanese economy faced several macroeconomic instabilities that manifested in unprecedented-ly high inflation rates. Accordingly, The Central Bank of Sudan (CBoS) adopted a highly contractionary monetary policy to curb inflation through measures like restric-tive credit controls and high reserve requirement ratio (Elhiraika, 1998).

Another explanation for the drop in financial intermediation in the period is the Islamization of the entire financial system in 1992. The main consequence of this shift was the abolishment of *ex ante* interest rates. As an alternative profit/ loss ratios were introduced that are compliant with Islamic modes of finance.

The introduction of the new system discouraged lenders who predicted the new system would entail financial losses on their potential investments. In 1996 the Sudanese government embarked on a financial liberalization program with the assistance and guidance of IMF. The program included several reforms, such as the improvement in bank supervision, advancing the inter-bank market and introducing market monetary policy instruments (Kireyev, 2001). The policy package resulted in immediate improvements in the financial sector and created an environment that was conducive to private deposits creation in the financial sector. As indicated by the increase in financial intermediation.

Graph 2: M2/GDP, in percent, Sudan, 1960-2010
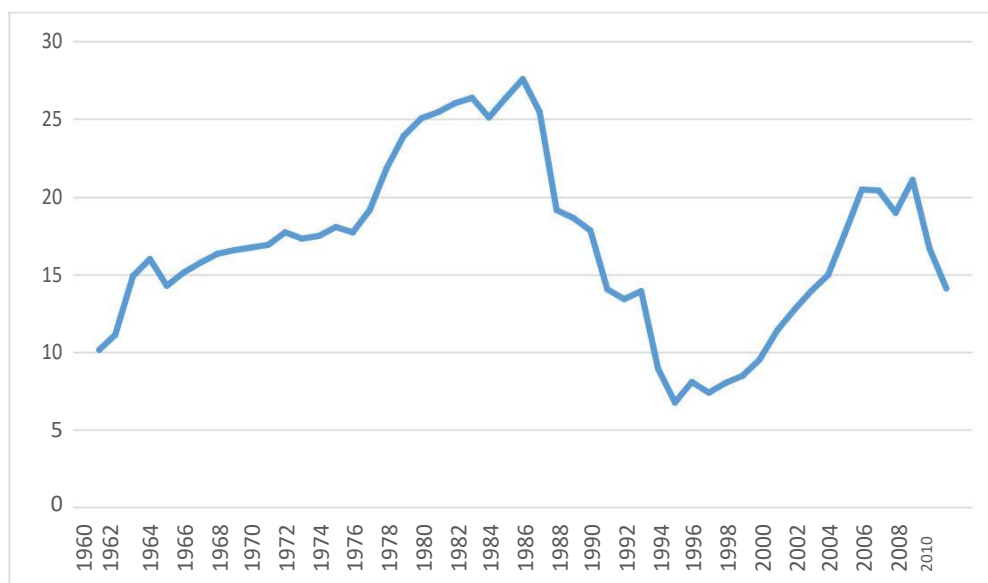
Source: WB (2016)

The main rationale for implementing financial repression is to give the government access to fiscal resources without the need to go through the government budget, and in cheaper ways than receiving financing in the market. In the following section, I will review two financial repression policies linked to the fiscal needs of the government. These are credit policy and reserve requirement.

Credit policy includes any regulations regarding the credit activities of commercial banks such as quantitative credit ceilings and selective directives on the allocation of the credit. These measures are employed to achieve several objectives. For example, the government can use credit policy to funnel funds to certain economic sectors deemed strategically important. By doing so, the government can develop these sectors without the need to allocate resources from its budget (Ito, 2009). The CBoS actively used credit policies since the 1970s. According to Elhiraika (1998), the credit policy in Sudan was used primarily to achieve two objectives: the stabilization of the economy and the development of the certain economic sectors.

During the 1970s the CBoS's credit policy was relatively relaxed. It took the form of selective credit policies where commercial banks were forced to allocate a minimum 10% of their total credit to development loans (Mohamed et al., 2004). However, later in the 1980s, the credit policy was progressively more restrictive in terms of the size and sectoral allocation of loans, as banks were directed to allocate a higher share of their total lending to the priority sectors[8] in the following proportions: 30% for export sector, 25% for the industrial sector and 35% in form of development loans (Elhiraika, 1998). In addition to that, in 1986 the CBoS introduced an overall lending ceiling in the banking sector to curb the high inflation episode in the economy at that time. The reason for imposing such ceiling was that the government thought the increase in lending to the private sector to be the main reason behind the run-away inflation rate.

The early 1990s witnessed the implementation of the National Economic Salvation Program (NESP) in 1990-1993. The program aimed to achieve food self-sufficiency with the agricultural sector being the crucial sector to meet this goal. Hence,

---

[8] The sectors that were considered to be a priority are: agriculture, manufacturing and transportation.

the share of priority sectors from the overall credit ceiling was raised to 80% of which 40% were meant for the agricultural sector. The share of the agricultural sector in the overall credit ceiling was further increased to amount to 50% (Mohamed, Abdullah &Abdullah 2004).

With the advent of the comprehensive financial liberalization reform onwards, the monetary authorities suspended the overall ceiling on credit along with the mandatory sectoral allocation of credit. Nonetheless, the government continued its sectoral policy by granting the commercial banks preferential treatment in exchange for extending credit to the priority sectors. This encompassed, for example, the priority in purchasing government treasury bills, lower discount rate and reserve requirements (CBoS, 2016).

Another policy that raises funds to the government is the reserve requirement. Which is the percentage that central bank ask the banks to keep it as liquid assets, this policy help the government to gain seigniorage revenue through artificially increasing the demand for money.

Like the credit policy, the CBoS extensively used this policy tool with the objective to better control the liquidity in the financial sector. Graph 3 illustrates the required reserve ratio during the period 1983-2015. Up until the early 1980s, the required reserve ratio was under 10%. However, since the beginning of the 1980s, the ratio was gradually raised by the CBoS and hit the 20% in 1987. This policy was implemented in correspondence to the inflationary pressure that had developed during that time. The ratio was kept in the range of 18-20% till 1993 and sharply rose to 30% in 1994. It remained on average at 24% average till 2001. The CBoS hiked the reserve requirement again after the session on South Sudan because of the inflationary

pressures. By 2001, the CBoS brought down the ratio and was maintained in the range 14%-15%. Yet, it was increased again after the secession in 2011.

Graph 3: Reserve requirement, in percent of total deposits (except investment deposits), Sudan, 1983-2002
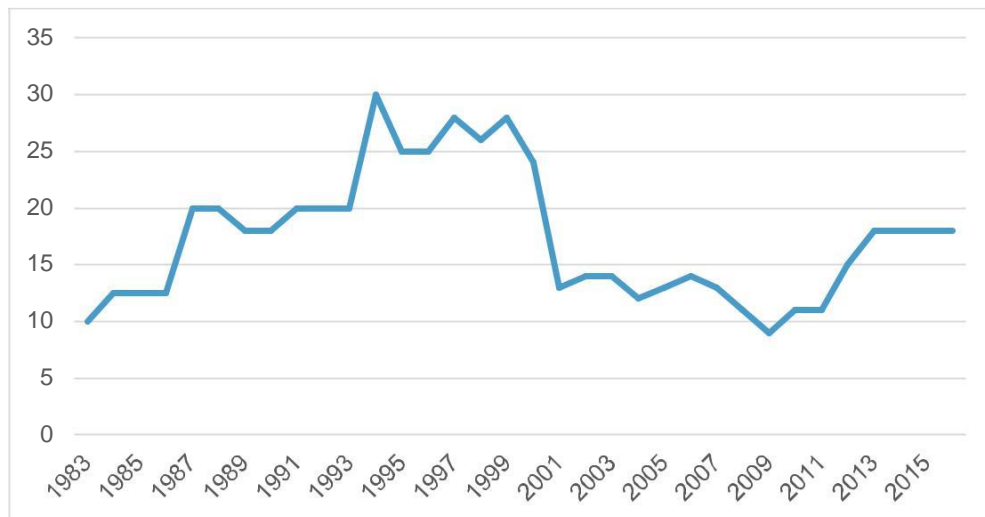

Source: CBoS

Elhiraika & Ismail (2000) postulate that the restrictive monetary policies had an adverse effect on the level of credit to the private sector, in addition to the overall ceiling, the sectorization policies forced to allocate most of the credit in the banking system to priority sectors that bear a high level of credit risk. Graph 4 and Graph 5 presents the ratio of bank credit to bank deposits and the credit to private sector as a % of GDP respectively. It can be shown that both indicators have exhibited significant contraction with intense credit and reserve requirement policies 1980s and early 1990s.

Graph 4: Domestic credit to private sector, in percent, of GDP, Sudan, 1970-2014
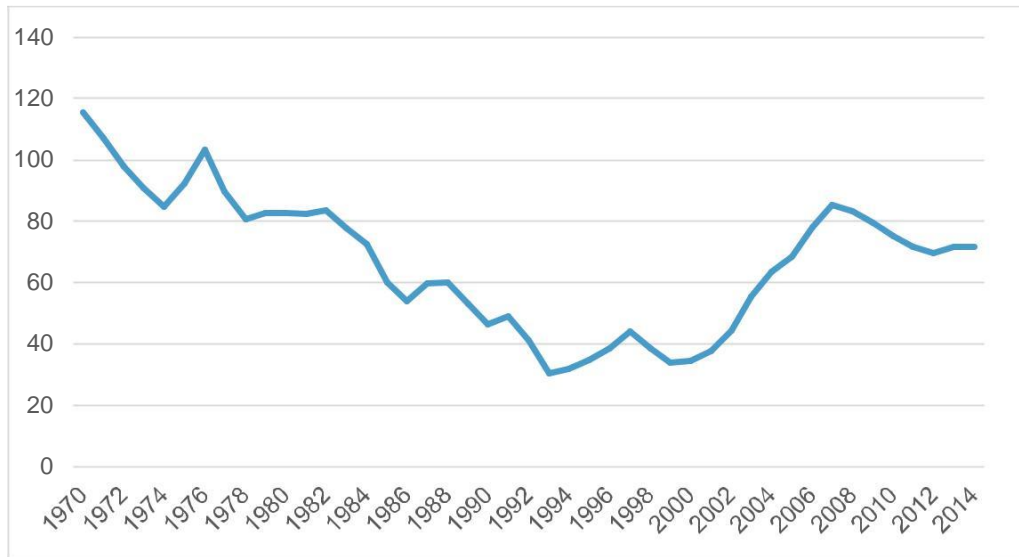
Source: WB (2016)

Graph 5: Bank credit to bank deposit, in percent, Sudan, 1970-2014
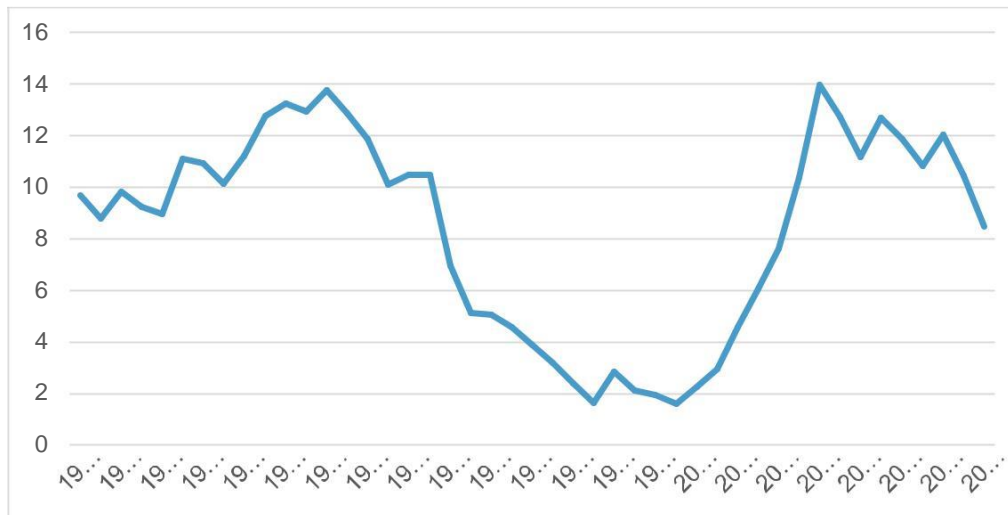
Source: WB (2016)

It is noteworthy to acknowledge that the repressive monetary policies are not the sole impediment to financial development in Sudan. Kireyev (2001) notes several factors in this regard. For example, he finds that there is a high preference in Sudan to keep money in the form of cash, as the confidence in the financial sector is meager following the long history of economic and political instability.

4   Estimation of financial repression revenue in Sudan

4.1   Methodology and Data

In their seminal paper titled "Government Revenue from Financial Repression", Giovannini and De Melo aimed to estimate the revenue generated by financial repression. These researchers developed a theoretical framework which they then use to evaluate the budgetary effects of financial repression based on an economy comprised of two actors: the government and the consumer. Financial repression is represented in the form of a tax levied on the consumers' holdings of foreign assets; the financial repression tax lowers the net interest paid on foreign assets below the rate paid on domestic assets, which means that there is an incentive for consumers to hold more domestic assets (in this case government debt). If the government can borrow domestically at a lower rate than abroad, there will be a budgetary gain. The model is based on two critical assumptions: firstly that capital controls on outflows are administered efficiently, and, secondly, that the foreign interest rate is higher than the domestic interest rate. The authors derive a method to estimate revenue from financial repression, based on the idea that financial repression enables the government to borrow at a lower rate than the prevailing international rate. Therefore, the revenue from financial repression can be obtained by finding the difference between foreign and domestic costs of borrowing as follows:

$$i_t = \frac{Interest\ Payments\ on\ Domestic\ Debt\ (LCU)}{(Domestic\ Debt\ Outstanding_{t-1} + Domestic\ Debt\ Outstanding_t)/2} \qquad (1)$$

The effective USD interest rate on external debt has two components: the nominal USD interest on external debt, and the exchange rate component.[9] The nominal USD interest on external debt is defined as:

$$i_t{}^* = \frac{Interest\ Payments\ (\text{USD})_t + Change\ in\ Interest\ Arrears(\text{USD})_t}{(Debt\ Outstanding\ (\text{USD})_{t-1} + Debt\ Outstanding\ (\text{USD})_t)/2} \tag{2}$$

The authors included interest arrears in equation 2 because they argue that it give a better estimation of the interest rate payments faced by countries. No rationale for dividing interest payments by the average outstanding debt is provided. In the notable absence of an explanation on the part of the authors, I see that this is a strategy to smooth out the changes in debt.

Second, the exchange rate component is constructed by finding the average annual change in the exchange rate multiplied by the nominal USD interest on external debt as follows:

$$Exchange\ rate\ component = i^* * (percent\ depreciation\ of\ LCU/\ USD\ exchange\ rate) \tag{3}$$

The effective USD interest rate on external debt is the sum of equation 1 and 2. Finally, financial repression revenue is given by:

$$Revenue\ from\ financial\ repression = (i_t{}^* - i_t) * Domestic\ Debt\ Outstanding_t \tag{4}$$

For this analysis, I will adapt the model to the specifics of the Sudanese economy and the data available. Therefore, we must firstly take into account that in Sudan all financial transactions are governed by the Islamic mode of finance which prohibits ex-ante interest

---

[9] Giovannini and De Melo (1993) specify a third component of the effective Usd interest rate on exyernal debt: the "debt revaluation cost" which is the increse in the USD value of debt due to the apprecitaion of the USD against other currencies that external debt is denominated in. The authors find this component to be insignificant. In this paper I exclude this component because most of the external debt of Sudan is denominated in USD.

rates. In this context, the government has developed an array of Islamic compliant certificates to fund its deficit. The certificates bear a specific profit/ loss margin instead of the conventional interest rate. Hence, to make the estimation method applicable to the case of Sudan, I will substitute the interest rate in the equations above with the annual profit/ loss margin on the certificates. Despite the fact that determination of both ratios is fundamentally different, the substitution can be justified on the basis that both represent a cost of borrowing to the government, and they are accounted for in the government budget balance as fiscal expenditure.

Additionally, while theoretically, the holder of the government certificate could incur either loss or profit, in reality, since the inception of the government certificates in the late in 1999, there has been no record of losses suffered by the certificates holders. Secondly, in the estimation of Giovannini & Melo (1991), total domestic debt is taken into consideration. However, In the case of Sudan, data on domestic outstanding debt is only available for the government's short-term domestic certificates of one-year maturity, known as the Government *Musharakah* Certificates (GMCs). Therefore I will use short-term domestic and external debt instead of the long-term debt. Thirdly, arrears on external debt will be excluded, since information on arrears is only attainable for long-term external debt. Lastly, data required for this estimation is sourced from Sudan Company for Financial Services (SCFS), the WDI and the World Bank International Debt Statistics (WB- IDS). All data cover the period 2000-2014. Complete information regarding variables construction and data sources is available in appendix 1.

4.2 Results

Table 1 presents the results of the application of my adapted version of Giovannini & De Melo's (1991) model for estimating the government revenue generated by financial re-

pression. The data shows that the revenue from financial repression in Sudan is negative for the period 2000 to 2014, with an average of -8% of GDP per annum. Appendix 2 contains the detailed estimation results. These findings indicate that the cost of domestic borrowing in Sudan during the period analyzed is higher than the cost of foreign borrowing. This stands in contrast with the hypotheses which may be drawn from conclusions of Giovannini & Melo's (1991) panel study, in which the average annual revenue for the sample is 1.4% of GDP per annum. However, the negative financial repression revenue estimated is in line with the findings of Aizenman & Pasricha (2013) who estimated that the revenue from financial repression is -0.19% of GDP.

Table 1: Financial repression revenue, in averages, Sudan, 2000-2014

Financial repression revenue as % of GDP	Interest rate differential component		Exchange rate component	
	As % per annum	As a % of GDP	As % per annum	As a % of GDP
-0.8	-0.2	-0.8	0.0	0.0

Source: Based on appendix 2

Further, I decompose the annual repression revenue into two components. The interest rate differential is the difference between equation 1 and 2, and the exchange rate component is equal to equation 3.

The numbers clearly show that the exchange rate depreciation has a negligible weight in determining the revenue from financial repression. This observation also contradicts the results of Giovannini & Melo (1991), in which the majority of variation in financial repression revenue between countries stems from exchange rate changes. Once again, the case study of Sudan supports the findings of Aizenman & Pasricha (2013), who found that the exchange rate component was minimal compared to the interest rate differential.

4.3 Discussion

The output of the estimation presented in this chapter clearly demonstrates that financial repression is not a significant source of government revenue in Sudan. Furthermore, my analysis suggests that the Sudanese government faces a lower cost of external borrowing compared to the cost of domestic borrowing. Interestingly, this outcome runs against the literature that has been surveyed in chapter one, which would predict that in a country with an inefficient tax system and suppressed financial system, the government would have an incentive to employ capital controls for fiscal considerations. In the following sections, I will present some of my explanations as to
why this is the case.

4.3.1 Data considerations

The data used to generate the estimations presented may account for the findings of this research, which run against the conventional literature. The data relating to debt only took into account the short-term government domestic debt. This amendment to the original model proposed by Giovannini & De Melo (1991) could lead to a significant underestimation of the revenue generated from financial repression, given that most of the external debt of Sudan has a long-term maturity. Graph 6 compares the long-term and short-term external debt stocks for Sudan in 2014. The data illustrate that the long-term external debt was almost three times the short-term external debt in 2014. Hence, the exclusion of the interest payments on long-term external debt underestimates the interest rate differential component.

Graph 6: External debt stocks, long-term, and short-term, in billion USD, Sudan, 2014
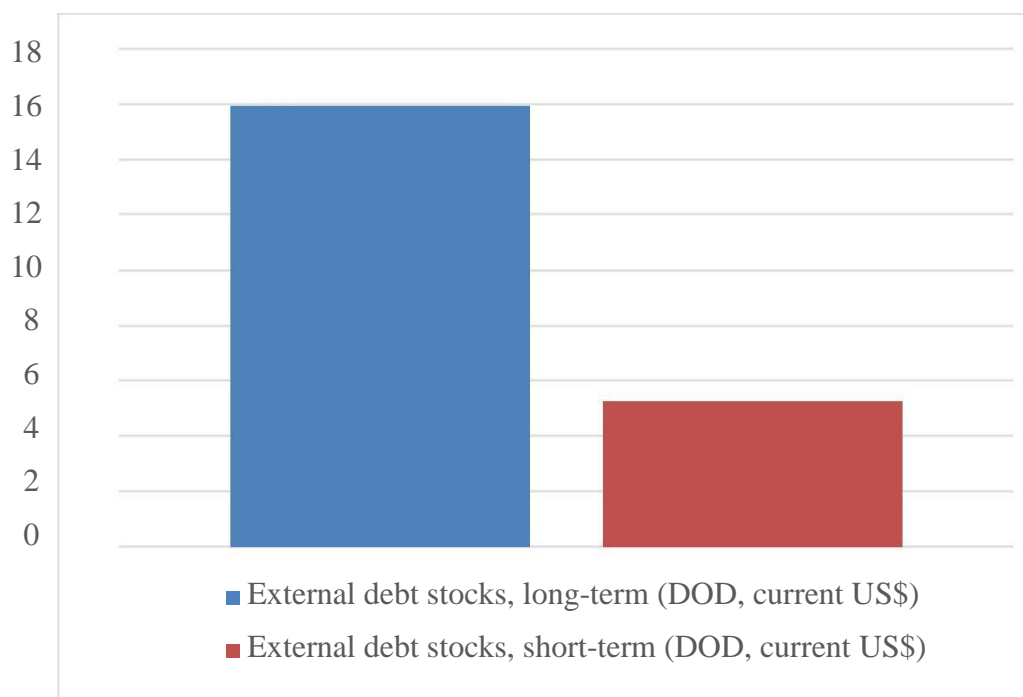
Source: WB (2016)

The exclusion of the arrears on debt obligations of Sudan could lead to a further underestimation of revenue. According to the IMF debt sustainability analysis conducted in 2014, interest arrears represent 88% of the total external debt stock.[10] However, although the data alteration to some extent undermines the estimated financial repression revenue, it does not resolve the question of why the estimated financial repression results were negative.

4.3.2 Exchange rate stability:

---

[10] DSA is an analytical frame work developed jointly by the IMF and WB to assess the sustainability of external debt (WB, 2014)

The management of the exchange rate in Sudan is a factor that might explain negative financial repression revenue. The figures of the exchange rate component indicate that exchange rate depreciation was not a major factor in determining the revenue from financial repression. The main reason for this is the low volatility in the exchange rate during the sample period; Graph 7 illustrates the change in the exchange rate of the Sudanese pound against the USD. Before 2011, the exchange rate was relatively stable with only two distinctive swings, the in 2006 and the second in 2010. However, after the secession of South Sudan in 2011, the SDG depreciated steeply, falling by 35% against the USD. The depreciation has persisted after this point but at a lesser rate.

According to Giovannini & De Melo (1991) in most of the countries included in their sample, the gain from financial repression was a result of exchange rate depreciations. Conversely, Aizenman & Pasricha (2013) found that most of the countries they surveyed experienced an appreciation in the exchange rate due to a surge in capital inflows.

The reason for the stability of the exchange rate in Sudan for most of the period under consideration is the exchange rate regime adopted by the monetary authority. From 1998 until 2002 the CBoS was following a *de facto* fixed exchange rate regime in which the SDG was pegged to the USD (Elbadawi & Kamar, 2006; IMF, 2003). However, with the increase in oil exports, the Sudanese economy enjoyed a period of economic prosperity. The economy registered high economic growth in this period, and inflation rates dropped significantly. These favorable conditions, in turn, prompted Sudan's graduation to a more flexible exchange rate regime. In 2004 the CBoS adopted a managed float exchange rate regime. However, in the aftermath of the adverse oil shock and corresponding loss of revenue following secession in 2011. CBoS devalued the SDG as a response to this situation (as indicated by the hike in exchange rate visible in the Graph 7).

Graph 7: Change in official exchange rate, SDG/USD, year average, in percent, Sudan, 2000-2014
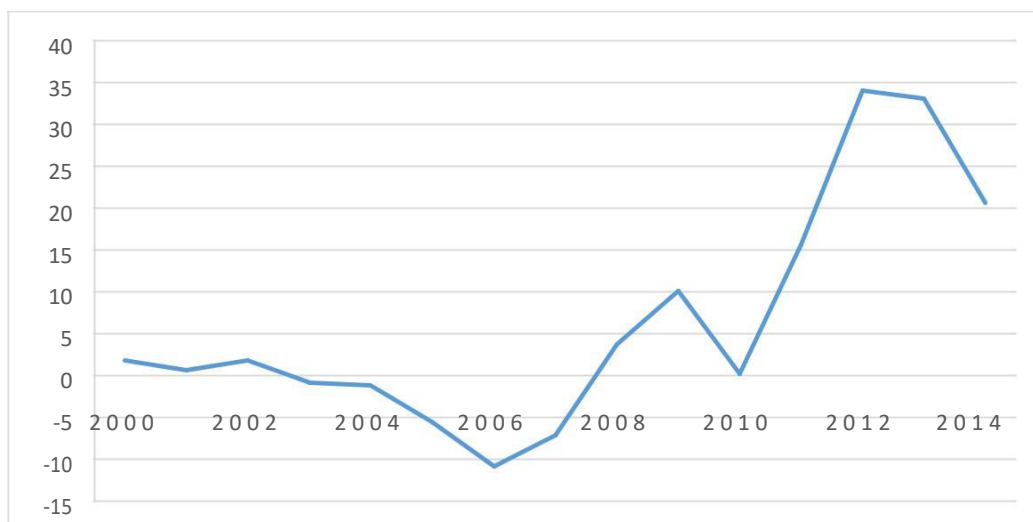
Source: Based on WB (2016)

Historically, it can be shown that the exchange rate regime choice in Sudan is influenced by its inflation history. Exchange rate devaluation in Sudan has historically

had significant pass-through effects on domestic prices, since its independence up until

1979 the SDG was pegged to the USD (Ebaidalla, 2014). In the 1980s, the peg was abandoned and replaced by a flexible exchange rate regime as a part of the structural adjustment program in cooperation with the IMF.[11] As a result, the SDG experienced a series of devaluations that led to unprecedented inflation hikes in 1985, when the inflation exceeded 60% (Suliman, 2012). The monetary authorities resorted once again to managing the exchange rate in

---

[11] In the late 1970s the Sudanese economy started to show signs of economic distress, that eventually forced the government to turn to the IMF and WB for assistance, as a condition to credit disbursement, the Sudanese government had to adopt a new policy package was oriented towards revitalizing the export sector (Wohlmuth & Hansohm, 1986).

response to this crisis. In 1992, in conjunction with the second structural adjustment program in Sudan,[12] the exchange rate was allowed to float freely, However, soon after, the flexible exchange rate regime was abolished due to the depreciation of the local currency that resulted in hyperinflation for the first time in Sudan's history as it is shown in graph 8.

**Graph 8: Inflation, change in consumer price index (CPI), in percent, Sudan, 1970-2014**
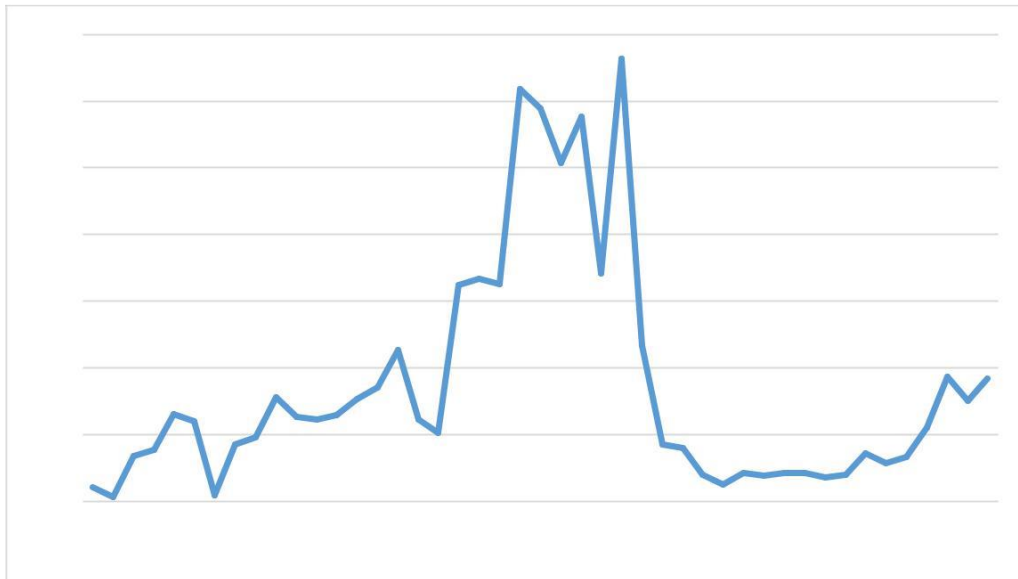
Source: WB (2016)

Another motivation for adopting managed exchange rate regimes in Sudan is the fear of an external debt crisis. Sudan is currently experiencing a debt crisis that dates back to the 1980s when the government defaulted on its debt repayments to the IMF for the first time (Rahman, 1995). Since that time, the country has been accumulating external debt as a result of its incapacity to service its debt principles and interest payments (Ahmed, 2010). The steady increase in external debt stock is plotted in Graph 9. Most of the external debt is denominated in hard currency. Therefore, a depreciation in the exchange rate will worsen the external debt crisis in Sudan by inflating the debt burden.

---

[12] The second wave of structural adjustment program in Sudan was not officially recommended by the IMF. But similar to the first structural adjustment program it focused in liberalizing the exchange rate and trade sector (Suliman, 2012)

Graph 9: External debt stock (excluding arrears), in billion USD, Sudan, 1970-2014
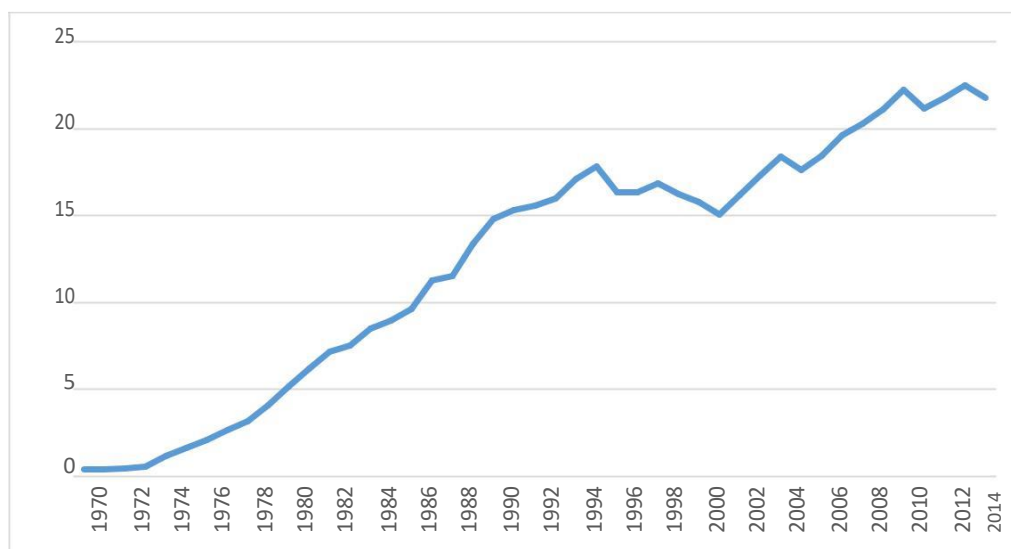
Source: WB (2016)

4.3.3 High domestic cost of borrowing

According to my estimation output, the interest rate differential composes most of the financial repression revenue, which indicates that the main reason for the negative financial revenues is the difference between the high profit-margin on GMCs and external costs of borrowing. Aizenman & Pasricha (2013) argue that negative interest rate differentials in their study on emerging markets can be attributed to several external and domestic factors. The strong economic performance of the emerging markets in the 2000s lead to a drop in the external cost of borrowing, and the increasing domestic demand corresponded with a lack of capital hiked domestic interest rates. In the case of Sudan, however, I argue that the negative interest rates differential is due to the government's need to mobilize domestic resources.

Sudan has limited access to fiscal resources, for both domestic and external reasons, in terms of domestic factors. It has been demonstrated in the previous chapter that the tax system in Sudan is inefficient. Therefore, the country faces difficulties in mobilizing enough

financial resources to meet its spending needs. Regarding the external factors, Sudan has limited access to external credit. This is due to the fact that Sudan is a subject of economic sanctions imposed by the USA since the 1980s, a fact which relates to the ongoing armed conflict and questions regarding the legitimacy of the government[13]. Sudan's lack of access to external credit is further constrained by its existing debt obligations. Sudan's default on debt repayments in recents years has damaged its relationship with creditors, meaning the nation has so far not been granted limited credits (IMF, 2014).[14]

In light of Sudan's low capacity to mobilize domestic resources through taxation and its limited access to external financing, the government has been forced to explore other sources of finance. For example, in 1999 the Ministry of Finance and National Economy introduced GMCs with the aim of mobilizing domestic savings to finance the budget deficit. Moreover, since 2000 GMCs have been used as an additional tool for open market operations along with the Central Bank of Sudan *Musharakah* certificates (UNDP, 2006).

The government has managed to attract considerable levels of domestic savings; this is evident through the increasing bulk of public debt that is financed domestically (IMF, 2014). Furthermore, there is a steady increase in the issuance of the GMCs. According to Table 4, the average the size of the issuance of the GMCs grew at a rate of 95% per annum in the period 2000- 2014. The main driver for the growth in the size of GMCs is the growing demand for the government's certificates due to the excessively high profit-margin that is offered by the GMCs.

case of Sudan, finding two major factors that emerged as probable explanations: namely, the relative stability of the currency and the high domestic cost of borrowing.

---

[13] The complexity of these issues goes far beyond the scope of this study. See Jok (2007) and Mamdani (2009) for more information regarding this context.

[14] One of factors behind the delay in admitting Sudan into the highly indebted poor countries initiative is that Sudan did not meet it debt obligations (IMF, 2014b)

5 Conclusions

The overall aim of this paper was to advance an understanding of the effects of capital account liberalization through examining the fiscal effects of capital controls, taking Sudan as a case study. To that end, the paper had two specific objectives: firstly, to identify the structural characteristics of the Sudanese economy which justify the employment of capital controls for fiscal motivations, and secondly, to assess empirically whether capital controls have a fiscal effect. In this section, I will summarize the above-mentioned objectives, as well as my findings. I will then present my recommendations for policy and further research.

Regarding the determinants of capital controls for fiscal considerations, the literature discusses capital controls as an endogenous variable that is determined by a number of structural characteristics. The paper examined two of these determinants, namely, the level of efficiency of the tax system, and the existence of a repressed financial system.

Concerning the inefficiency of the tax system, the literature suggests that the presence of an inefficient tax system will lead to a reliance on alternative instruments to raise fiscal revenues. Following this argument, an examination of the tax system of Sudan was conducted through a descriptive analysis of several tax system indicators. The analysis revealed that due to a combination of policies and structural factors, Sudan has been largely unable to mobilize domestic resources to fund public expenditure.

Concerning the financial sector, researchers such as Giovannini & De Melo (1991), Reinhart & Sbranica (2011) and Batilossi (2003) have demonstrated that revenue from capital controls is generally associated with a highly regulated financial sector. This can be explained by the fact that through several regulations the government can restrict domestic resources from leaving the country to a certain extent and therefore, it can benefit fiscally from those resources. In order to evaluate these factors in the Sudanese context, an analysis was made

based on different sets of data, and it was concluded that the financial sector in Sudan is repressed.

The second objective of the research was set to present a quantitative assessment of fiscal effects of capital controls through the channel of financial repression. My estimation was based on the methodology proposed in Giovannini & De Melo (1991), with some adjustments. The methodology was constructed to calculate the fiscal gain accrued to the government assuming that capital controls are applied. In this model, the revenue is equal to the difference between the cost of borrowing abroad and domestically. My results were not consistent with the majority of the literature I reviewed. While the literature review suggested that most developing countries with suppressed financial system will gain fiscal revenue from imposing capital controls, my results indicated that Sudan witnessed a net loss of revenue from capital controls.

Four explanations for this result were identified. Firstly, in this research, I used a case study methodology rather than the cross-sectional methodology employed in the other studies. I, therefore, examined the economic factors particular to the Sudanese economy. These subtle differences may have been overlooked in other studies drawing from larger samples. Secondly, the data available was limited, which necessitated an adjustment of Giovannini's & De Melo's model. This adjustment might have led to an underestimation of the actual size of the revenue. The third factor is related to exchange rate regime management in Sudan. The *de facto* fixed exchange rate regime that was adopted in Sudan had led to a lack of currency changes that helped reduce the cost of external borrowing. The decision to resort to a managed exchange rate regime was motivated by a government imperative to halt inflationary pressures in the economy and further aggravation of the external debt crisis. The fourth factor was the high domestic cost of borrowing for the government. The government offers a very high yield on its treasury bills. According to the estimations presented in this research, the

yield is higher than the interest rate that is paid by the government for external borrowing. The divergence of the Sudanese case study from the results of the cross-sectional studies calls for the examination of this question on a country-level.

The strength of the conclusions presented above may be undermined by the fact that the analysis presented did not account for all fiscal effects. I note that Abdel, Ali, & Elbadawi (2015) and Abdel-Rahman (1997) have found that the Sudanese government has used seigniorage revenue in as a source of finance at various points in time. Furthermore, the data utilized in the estimation. Furthermore, that the data used in the estimation is not optimal. There is a lack of available data detailing long-term external debt, which is critical to evaluate fully the role of capital controls in generating fiscal revenue. This means that although the analysis in his paper has concluded that there are no significant fiscal effects of capital controls in Sudan, it cannot be interpreted as a convincing case against capital controls in general. Governments may have other incentives to apply capital controls, and this is particularly relevant in the case of Sudan. Due to the high level of political and economic instability, there might be a case for using capital controls to halt capital flight, which might cause disturbances in the exchange rate and cause inflation.

However, resorting to capital controls is not an optimal means of accruing fiscal revenue. In order to make its sources of revenue more sustainable, the Sudanese government must improve the efficiency of its tax system, as well as create other sources of revenue which are capable of financing government expenditures, without accruing of domestic debt at a high interest rate.

6 Bibliography

Rahman, A. R. A. A. (1995). The Domestic Origins of Sudan's External Debt Crisis. Intellectual Discourse, 3(2), 153–179. Retrieved from

http://journals.iium.edu.my/intdiscourse/index.php/islam/article/viewFile/357/ 446.

Ahmed, M. M. (2010). Global Financial Crisis Discussion Series Paper 19: Sudan Phase 2. Overseas Development Institute, London, UK. Retrieved from www.odi.org.uk.

Aizenman, J., & Guidotti, P. E. (1994). Capital Controls, Collection Costs and Domestic Public Debt. Journal of International Money and Finance, 13(1), 41– 54. http://doi.org/10.1016/0261-5606(94)90023-X.

Aizenman, J., & Pasricha, G. K. (2013). Why do Emerging Markets Liberalize Capital Outflow Controls? Fiscal versus Net Capital Flow Concerns. Journal of International Money and Finance, 39, 28–64. http://doi.org/10.1016/j.jimonfin.2013.06.018.

Alamir, M. (2007). Macroeconomic Policies and Economic Performance in Sudan: An Analytical Review for the Period 1960-2006 (Unpublished doctoral thesis). University of Khartoum, Khartoum, Sudan.

Alesina, A., Grilli, V., & Milesi-Ferrett, G. M. (1993). The Political Economy of Capital Controls. National Bureau of Economic Research Working Paper No. 4353. Retrieved from: http://www.nber.org/papers/w4353.pdf.

Ali, A. A., & Elbadawi, I. A. (2015). Explaining Sudan's Economic Growth Performance. In

    Ndulu, B. J., O'Connell, S. A., Azam, J. P., Bates, R. H., Fosu, A. K., Gunning, J. W,

    & Nijnkeu, D. (Eds.), The Political Economy of Economic Growth in Africa, 1960–

    2000 (pp. 193-243). Cambridge University

    Press.

Asher, M. (1997). Reforming the Tax System in Indonesia. In W. Thirsk (Ed.), Tax

    Reform in Developing Countries (pp. 127–164). World Bank Publications.

Atkinson, A. B. (1977). Optimal Taxation and the Direct versus Indirect Tax Controversy.

    Canadian Journal of Economics, 10(4), 590–606. Retrieved from

    http://econpapers.repec.org/article/cjeissued/v_3a10_3ay_3a1977_3ai_3a4_3a

    p_3a590-606.htm.

Bakker, A. F. (1996). The Liberalization of Capital Movements in Europe (pp. 1-9).

    Springer Netherlands, Dordrecht, Netherlands.

Battilossi, S. (2003). Capital Mobility and Financial Repression in Italy, 1960-1990: A Pub-

    lic Finance Perspective. UC3M Working Papers No 2003-02. Universidad Carlos

    III, Instituto Figuerola de Historia y Ciencias Sociales. Retrieved from http://e-

    archivo.uc3m.es:8080/handle/10016/402.

BROCK, P. L. (1989). Reserve Requirements and the Inflation Tax. Journal of Money,

    Credit and Banking, 21(1), 106-121. Retrieved from http://philiplbrock.com

CBoS, Annual reports, various issues, Khartoum, Sudan.

CBoS. (2016). tatower al-siasat al-ngdia fe al-sudan khilal 1990-2009 [The Evolution of
Monetary Policies in Sudan During 1990-2009]. Retrieved from
http://www.cbos.gov.sd/node/168.

Cukierman, A., Edwards, S., & Tabellini, G. (1989). Seigniorage and Political Instability.
National Bureau of Economic Research Working Paper No. 199. Retrieved from
http://www.nber.org/papers/w3199.pdf.

Dooley, M. P. (1995). A Survey of Academic Literature on Controls over International
Capital Transactions. IMF Working Paper, 43(4), 639–687.
http://doi.org/10.2307/3867365

Drazen, A. (1989). Monetary Policy, Capital Controls and Seigniorage in an Open Economy.
In De Cecco, M., & Giovannini, A (Eds.), A European Central Bank?: Perspectives on
Monetary Unification After Ten Years of the EMS. Cambridge University Press. Re-
trieved from
https://books.google.de/books?hl=en&lr=&id=a1BKH9yPCfcC&oi=fnd&pg=
PA13&dq=monetary+policy+capital+controls+and+seiniorage+in+an+open+e cono-
my&ots=FyZG1LzkoM&sig=cabql0esdAxea58v33LP9qeRPYs.

Ebaidalla, E. M. (2014). Real Exchange rate Misalignment and Economic Performance in
Sudan Exchange Rate Policy in Sudan : Some Stylised Facts. African Review of
Economics, 6(2), 115–140. Retrieved from http://www.african-review.com/Vol. 6
(2)/Real exchange rate misalignment.pdf.

Eichengreen, B., Hausmann, R., & Panizza, U. (2007). Currency Mismatches, Debt Intoler-
ance, and the Original Sin: Why They Are Not the Same and why it Matters. In Ed-
wards, S (Ed.), Capital Controls and Capital Flows in Emerging Economies: Policies,
Practices and Consequences (pp. 121–170). University of Chicago Press. Retrieved
from http://www.nber.org/chapters/c0150.pdf.

Elbadawi, I., & Kamar, B. (2006). The Great Debate on Exchange Rate Regimes: Why
Should the MENA Region Care?. Paper presented at the 12th Annual Conference of
the Economic Research Forum for the Arab Countries, Iran and Turkey, Cairo, Egypt.
Retrieved from http://ssrn.com/abstract=1465594.

Elhiraika, A. B. (1998). Macroeconomic Instability, Financial Repression and Islamic
Banking in Sudan. IIUM Journal of Economics and Management, 6(2), 61-86.

Elhiraika, A. B. (2004). On the Design and Effects of Monetary Policy in an Islamic
Framework: The Experience of Sudan. The Islamic Research and Teaching Institute
Research Paper No. 203. Retrieved from
http://www.academia.edu/download/31235659/getFile.pdf

Fry, M. J. (1989). Financial development: Theories and Recent Experience. Oxford Review
of Economic Policy, 5(4), 13–28. http://doi.org/10.1093/oxrep/5.4.13.

Giovannini, A., & De Melo, M. (1991). Government Revenue from Financial Repression.
National Bureau of Economic Research Working Paper No. 3604. Retrieved from
http://www.nber.org/papers/w3604.pdf.

Grilli, V., & Milesi-Ferretti, G. M. (1995). Economic Effects and Structural Determinants of Capital Controls. International Monetary Fund Staff Papers, 42(3), 517.

Gruben, W. C., & McLeod, D. (2002). Capital Account Liberalization and Inflation. Economics Letters, (77), 221–225. http://doi.org/10.1016/S0165-1765(02)00137-4.

Holt, P., & Daly, M. (2000). A History of the Sudan: From the Coming of Islam to the Present Day. Pearson Education. Retrieved from https://books.google.de/books?hl=en&lr=&id=BkO14rpfY70C&oi=fnd&pg=PR7&dq=A+History+of+the+Sudan:+From+the+Coming+of+Islam+to+the+Present+Day&ots=OT__gWc11c&sig=mcxkOZOEGmLgrnH1HB-VPvnSnwc.

IMF. (2003). Sudan: 2003 Article IV consultations and First Review of the 2003 Staff-Monitored Program-Staff Report; and Public Information Notice on Executive Board Discussion. Retrieved from www.imf.org/external/pubs/ft/scr/2003/cr03390.pdf.

IMF. (2014a). Sudan 2014 Article IV Consultation and Second Review under Staff-Monitored Program—Staff Report; Press Releases; and Statement by the Executive Director for Sudan. Retrieved From https://www.imf.org/external/pubs/ft/scr/2014/cr14364.pdf.

IMF. (2014b). Sudan: Staff Report for the 2014 Article IV Consultation and Second Review under the Staff Monitored Program—Debt Sustainability Analysis. Retrieved from https://www.imf.org/external/pubs/ft/dsa/pdf/2014/dsacr14364.pdf.

Ito, H. (2009). Financial Repression. In The Princeton Encyclopedia of the World Economy.

    Princeton University Press. Retrieved from

    https://books.google.de/books?hl=de&lr=&id=BnEDno1hTegC&oi=fnd&pg=

    PR7&ots=wyyZT2PYnj&sig=T8swRkZTsH9dwEHaRjcBrMB_LPI#v=onepa

    ge&q&f=false.

Jha, R. (2003). Macroeconomics for Developing Countries (2nd ed). Routledge.

Jinjarak, Y. (n.d.). Economic Integration and Government Revenue from Financial Repres-

    sion. Economic Systems. http://doi.org/10.1016/j.ecosys.2012.10.003.

Jok, J. (2015). Sudan: Race, religion, and violence. Oneworld Publications. London, United

    Kindom.

Jonathan, M. (1999). Pass-Through of Exchange Rates and Import Prices to Domestic Infla-

tion in Some Industrialised Economies. Retrieved from http://www.bis.org/publ/work79.pdf.

Kireyev, A. (2001). Financial Reforms in Sudan: Streamlining Bank Intermediation. Re-

trieved from https://www.imf.org/external/pubs/ft/wp/2001/wp0153.pdf.

Leblang, D. A. (1997). Domestic and Systemic Determinants of Capital Controls in the De-

veloped and Developing World. International Studies Quarterly, 41(3), 435–454.

http://doi.org/10.1111/0020-8833.00051.

Mamdani, M. (2009). The International Criminal Court's Case against the President of Sudan: A Critical Look. Journal of International Affairs, 62(2), 85.

Massa, I. (2014). Literature Survey on Capital Account Management in Low-Income Countries. Overseas Development Institute Paper. Retrieved from https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9276.pdf.

Mathieson, D. J., & Rojas-Suarez, L. (1992). Liberalization of the Capital Account: Experiences and Issues International Monetary Fund Paper No. 92/46.

McKinnon, Ronald I. (1973). Money and Capital in Economic Development, Washington, DC: Brookings Institution.

Milesi-ferretti, G. M. (1998). Why Capital Controls? Theory and Evidence. In Eijffinger, S. & Huizinga, H. (Eds.), Positive Political Economy: Theory and Evidence (pp. 217-252). Cambridge University Press.

Mishkin, F. S. (2012). The economics of money, banking, and financial markets (10th ed) Global Edition. Pearson Education.

Mohamed, A. A., Abullah, K. Y., & Abudullah, B. A. (2004). tageem adwat al-siasa al nagdia wa al-tamweelia fe al-sudan 1980-2002 [Evaluation of Monetary and Finanace Policy in Sudan 1980-2002] Central Bank of Sudan Research Paper. Retrieved from http://www.cbos.gov.sd/sites/default/files/issue_4.pdf.

Mohamed, S. E., & Sidiropoulos, M. (2008). Finance-growth nexus in Sudan: Empirical

assessment Based on an Application of the Autoregressive Distributed Lag

(ARDL) Model. Paper presented in the Third International Student Conference

Proceeding of Empirical Models in Social Sciences, Izmir, Turkey.

Moore-Harell, A. (2001). Gordon and the Sudan: Prologue to the Mahdiyya 1877-1880.

Routledge. Retrieved from

https://books.google.de/books?id=jZC0AQAAQBAJ&printsec=frontcover#v= onep-

age&q&f=false.

Nimeiri, S. (1974). Taxation and Economic Development: A Case Study of the Sudan.
Khartoum: Khartoum University Press.

Reinhart, C. M. & Sbrancia, M. B. (2011). The Liquidation of Government Debt. National

Bureau of Economic Research Working Paper No. 16893. Retrieved from

http://www.nber.org/papers/w16893.pdf.

Reinhart, C. M., & Santos, M. A. (2015). From Financial Repression to External Dis-

tress: The Case of Venezuela. National Bureau of Economic Research Working

Paper No. 21333. Retrieved from http://www.nber.org/papers/w21333.

Riedel, J., Jin, J., & Gao, J. (2007). How China grows: investment, finance, and reform.

Princeton University Press. Retrieved from

https://books.google.de/books?hl=en&lr=&id=EyY5_U7jqakC&oi=fnd&pg=P

R9&dq=How+China+Grows:+Investment,+Finance,+and+Reform&ots=sj8m

ddU6B7&sig=GyFedOfVchm357in8ba6fAAI3Fs.

Rodrik, D. (1998). Who Needs Capital-Account Convertibility?. Princeton University Essays

    in International Finance No. 207 (55-65). Princeton University Printing Service. Re-

    trieved from

    https://www.researchgate.net/profile/Saskia_Sassen/publication/247932036_T

    he_Mobility_of_Labor_and_Capital_A_Study_in_International_Investment_a

    nd_Labor_Flow/links/5411771b0cf2b4da1bec4c57.pdf.

Romer, D. (2006). Advanced Macroeconomics (3rd ed). McGraw Hill, New York.

Roubini, N., & Sala-i-Martin, X. (1992). A Growth Model of Inflation, Tax Evasion, and

    Financial Repression. National Bureau of Economic Research Working Paper No.

    4062. Retrieved from http://www.nber.org/papers/w4062.pdf.

Roubini, N., & Sala-i-Martin, X. (1995). A growth model of inflation, tax evasion, and

    financial repression. Journal of Monetary Economics, 35(2), 275-301.

SCFS. (2014). al- tagreer al- sanawy ll aam 2014 [Annual Report 2014], Retrieved from

    http://www.shahama-sd.com/ar/reports-studies.

Schulze, G. G. (2010). The Political Economy of Capital Controls. Cambridge Books.

Segerstrom, P. S., & Sugita, Y. (2014). The impact of Trade Liberalization on Industrial.

    Journal of the European Economic Association, 13(6), 1167–1179.

    http://doi.org/10.1111/jeea.12140

Shaw, E. S. (1973). Financial Deepening in Economic Development. New York: Oxford University Press.

Snowdon, C. (2013). Aggressively regressive: the Sin Tax that make the poor poorer. Institute of Economic Affairs Current Controversies Paper No. 47. Retrieved from http://www.iea.org.uk/sites/default/files/in-the-media/files/Aggressively Regressive.pdf.

Stosky, J. G., & WoldeMariam, A. (1997). Tax Efforts in Sub-Saharan Africa. International Monetary Fund Paper No. 107. Retrieved from http://poseidon01.ssrn.com/delivery.php?ID=641117074119119074083025093095080024048073027027075062101125037127081029025008011101002007090082083018122069022049056027098022085071080066121093093103030094068084102098007105069106005110022000118&EXT=pdf.

Suliman, K. (2012). The Determinants of Inflation in Sudan. African Economic Research Consortium Research Paper No. 243. Retrieved from http://webcache.googleusercontent.com/search?q=cache:NYYEiKskU-4J:aercafrica.org/index.php/publications/doc_download/264-the-determinants-of-inflation-in-sudan+&cd=1&hl=de&ct=clnk&gl=de.

Suliman, K. M. (2005). The impact of trade liberalization on revenue mobilization and stability in Sudan. African Development Review, 17(3), 405–434. http://doi.org/10.1111/j.1017-6772.2006.00122.x.

Tanzi, V., & Zee, H. H. (2000). Tax Policy for Emerging Markets: Developing Countries. National Tax Journal, 53(2), 299-322. Retrieved from https://www.researchgate.net/profile/Vito_Tanzi/publication/240272972_Tax_ Policy_for_Emerging_MarketsDeveloping_Countries/links/0a85e53ca6b6ca9 3b6000000.pdf.

UNDP. (2006). Macroeconomic Policies for Poverty Reduction: The Case of Sudan. Retrieved from. Retrieved from http://www.sd.undp.org/content/dam/sudan/docs/Macroeconomic.pdf.

Von Furstenberg, G. M., & Fratianni, M. (1996). Indicators of financial development. The North American Journal of Economics and Finance, 7(1), 19–29. http://doi.org/10.1016/S1062-9408(96)90019-4.

Walsh, C. E. (2010). Central Bank Independence. In Monetary Economics (pp. 21– 26). London: Palgrave Macmillan UK. http://doi.org/10.1057/9780230280854_3.

WB. (2016). Africa Development Indicators. Money and quasi money (M2) as % of GDP [Excel file]. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=africa-development-indicators.

WB. (2016). Africa Development Indicators. Official exchange rate (LCU per US$, period average) [Excel file]. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=africa-development-indicators.

WB. (2016). Global Financial Development. Bank credit to bank deposits % [Excel file].
Retrieved from http://databank.worldbank.org/data/reports.aspx?source=global-financial-development.

WB. (2016). Global Financial development. Domestic credit to private sector % of GDP
[Excel file]. Retrieved from
http://databank.worldbank.org/data/reports.aspx?source=global-financial-development.

WB. (2016). International Debt Statistics. External debt stocks, long-term (DOD, current
US$) [Excel file]. Retrieved from
http://databank.worldbank.org/data/reports.aspx?source=international-debt-statistics.

WB. (2016). International Debt Statistics. External debt stocks, short-term (DOD, current
US$) [Excel file]. Retrieved from
http://databank.worldbank.org/data/reports.aspx?source=international-debt-statistics.

WB (2016). International Debt Statistics. Interest payments on external debt, short-term
(INT, current US$) [Excel file]. Retrieved from
http://databank.worldbank.org/data/reports.aspx?source=international-debt-statistics.

WB. (2016). World Development Indicators. Inflation, consumers pieces (annual %) [Excel
file]. Retrieved from http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators.

WB. (2014). Debt Sustainability. Retrieved March 7, 2016, from

http://www.worldbank.org/en/topic/debt/brief/dsf.

Wohlmuth, K., & Hansohm, D. (1986). Sudan: A Case for Structural Adjustment Policies.

Retrieved from http://www.iwim.unibremen.de/publikationen/pdf/sudan8.pdf

7 Appendixes

Appendix 1: Computations and data sources for estimation of financial repression revenue based on (Giovannini & De Melo, 1993)

Variable	Description /data sources
(1) Total interest payments on short- term external debt	In USD, WB-international debt Statistics
(2) Short- term external debt outstanding and disbursed	In USD, WB-international debt statistics
(3) Interest rate on external debt	#1 divided by (#2(t)+#2(t-1)/2
(4) Exchange rate	SDG/ USD, year average, WB- Africa development indicators
(5) Exchange rate depreciation	(#4(t)-#4(t-1)*100/#(t-1)
(6) Effective interest rate on external debt	#3(1+#5*.01)
(7) short-term domestic debt outstanding and disbursed	In SDG, SCFS (2014)
(8) total interest payments on short-term domestics debt	In SDG, GMCs' annual profit margin, SCFS (2014)
(9) Effective interest rate on domestic debt	#8 divided by (#7(t)+#7(t-1)/2
(10) Financial repression revenue	(#6-#9)*#7
(11) Interest differential component	#3-#9
(12) Exchange rate components	#3*#5*01

Appendix 2: Financial repression revenue estimation results

Years	Financial repression revenue	Interest rate differential component	Exchange rate depreciation component
2000	-0.11	-0.11	0.0000
2001	-0.66	-0.66	0.0000
2002	-0.57	-0.57	0.0000
2003	-0.63	-0.63	0.0000
2004	-0.69	-0.69	-0.0001
2005	-1.08	-1.08	-0.0005
2006	-0.82	-0.82	-0.0009
2007	-0.81	-0.81	-0.0009
2008	-0.84	-0.84	0.0003
2009	-1.10	-1.10	0.0002
2010	-1.05	-1.05	0.0000
2011	-1.20	-1.20	0.0012
2012	-1.10	-1.10	0.0018
2013	-0.86	-0.86	0.0009
2014	-0.72	-0.72	0.0003